REMARKS/ARGUMENTS

Favorable reconsideration of this application, in light of the following discussion, is respectfully requested.

Claims 20-41 are pending in this case, Claims 20, 24, 27-28, 30 and 36-38 amended, and Claim 29 canceled by way of the present amendment.

In the outstanding Office Action, Claims 20-24, 29, 38, and 39 were rejected under 35 U.S.C. § 102(b) as anticipated by Lill, et al. (U.S. Patent No. 6,824,813, herein "Lill"), and Claims 25-28, 32-35, 40, and 41 were rejected under 35 U.S.C. § 103(a) as unpatentable over Lill in view of Long, et al. (U.S. Pub. No. 2004/0018127, herein "Long").

Applicants and Applicants' representative thank Examiner Olsen for the courtesy of an interview with Applicants' representative on October 6, 2010. The discussion of Lill during the interview is substantially repeated herein. Further, Claim 20 is amended in an effort to advance prosecution.

Claim 20 is directed to an in-situ method of determining an etch property and recites, inter alia, "determining said etch rate from a ratio of said thickness to a difference between a time during said endpoint transition and a starting time of said etching."

Lill is asserted to describe every element of Claim 20. However, as discussed during the interview, Lill does not, in fact, describe an in-situ method of determining etch rate.

Lill is directed to monitoring substrate processing by comparing real time observations with predetermined traces. The predetermined traces, shown at Figures 6a to 6e and described at column 12, for example, each depict a trace of the reflected radiation intensity over a duration of processing for a dielectric of a different known thickness.

Identification of the different stages observed during processing allows identification of properties such as thickness of the overlayer and underlayer. More importantly for the present discussion, identification of the different stages of each trace allows an operator to

use the trace relating to a given dielectric thickness as a guide to determine the end of processing for an underlayer of a similar thickness in real time by providing guideposts along the process. As noted at the bottom of column 12 of Lill, "[t]his is significant improvement over prior art processing methods which often relied on predetermined etch-through time periods to guess when the dielectric or ONO layer was etched through."

Fig. 7 of Lill, which is cited by the outstanding Office Action, represents an example of how the traces of Figures 6a to 6e can be used to characterize the underlayer and overlayer. Specifically, Fig. 7 is an example showing "the duration of the dielectric etching and transition periods as a function of the thickness of a dielectric material."

However, Lill's obtaining of the predetermined traces and real time processing using the predetermined traces, as described above, and even the etch rate information conveyed by Fig. 7 do not describe "determining said etch rate" in-situ, as required by Claim 20.

Thus, as discussed during the interview, Applicants submit that, while a ratio of thickness to a duration of etching generally provides an etch rate, the claimed invention is directed to an in-situ method of determining etch rate, and Lill does not anticipate Claim 20.

Nevertheless, to expedite issuance of a patent in this case, Claim 20 is amended to incorporate the features of Claim 29, and features described in paragraph [0045] of the specification. Specifically, amended independent Claim 20 recites that two endpoint signals are measured. The "first endpoint signal corresponds to emission from a chemical constituent whose concentration decays during endpoint" and the "second endpoint signal corresponds to emission from a chemical constituent whose concentration rises during endpoint." Lill also fails to disclose these features. These features were previously included in Claim 29, which the Office Action rejected based on the combination of Lill and Long. The Action asserts Long as teaching an inflection point. However, nothing in Lill or Long teaches, or is even asserted to teach, the first and second endpoint signals of Claim 20 (previously recited in

Claim 29). Thus, the cited reference to Long fails to cure the deficiencies of Lill with regard to Claim 20, and Claim 20 patentably defines over the cited references.

As the remaining pending claims depend from Claim 20, these claims also patentably define over Lill for at least the same reasons as Claim 20. Nevertheless, these dependent claims provide further bases for allowance. For example, Claim 24 is amended to incorporate features described in paragraphs [0032] and [0033], which are not taught by the cited references. Further, Lill and Long and, therefore, the combination of Lill and Long is deficient in teaching a ratio signal, as defined by Claim 30, and determining an etch rate uniformity, as defined by Claim 41.

Accordingly, the outstanding rejections are traversed and the pending claims are believed to be in condition for formal allowance. An early and favorable action to that effect is, therefore, respectfully requested.

Respectfully submitted,

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